UTILITY PATENT APPLICATION TRANSMITTAL

(only for new nonprovisional applications under 37 CFR 1.53(b))

Attorney Docket No.	2426-108	Total Pages	15
First Named Inventor or Application Identifier			
V. McNALLY et al.			
Express Mail Label No.			

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

ADDRESS TO: **Assistant Commissioner of Patents**
Box Patent Application
Washington, D.C. 20231

1. [X] Fee Transmittal Form
   (Submit an original, and a duplicate for fee processing)
2. [X] Specification Total pages [15]
   (preferred arrangement set forth below)
   - Descriptive title of the invention
   - Cross references to Related Applications
   - Statement Regarding Fed sponsored R&D
   - Background of the Invention
   - Brief Summary of the Invention
   - Brief Description of the Drawings
   - Detailed Description
   - Claims
   - Abstract of the Disclosure
3. [ ] Drawing(s) (35 USC 113) (Total Sheets) [ ]
4. [X] Oath or Declaration (Total Pages) [3]
   a. [ ] Newly executed (original or copy)
   b. [X] Copy from a prior application (37 CFR 1.63(d)
   (for continuation/divisional with Box 17 completed)
   [Note Box 5 below]
   i [ ] DELETION OF INVENTOR(S)
   Signed statement attached deleting inventor(s) named in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b)
5. [X] Incorporation by Reference (useable if Box 4b is checked) The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.
6. [ ] Microfiche Computer Program (Appendix)
7. Nucleotide and/or Amino Acid Sequence Submission (if applicable, all necessary)
   a. [ ] Computer Readable Copy
   b. [ ] Paper Copy (identical to computer copy)
   c. [ ] Statement verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

8. [ ] Assignment Papers (cover sheet & document(s))
9. [ ] 37 CFR 3.73(b) Statement
   (when there is an assignee)
   [X] Power of Attorney
10. [ ] English Translation Document *(if applicable)*
11. [X] Information Disclosure Statement /PTO 1449
    [ ] Copies of IDS Citations
12. [X] Preliminary Amendment
13. [X] Return Receipt Postcard (MPEP 503)
    (Should be specifically itemized)
14. [ ] Small Entity Statement(s)
    [ ] Statement Filed in prior application, Status still proper and desired
15. [ ] Certified Copy of Priority Document(s).
    (if foreign priority is claimed)
16. [X] Other: Associate Power of Attorney

17. If a CONTINUING APPLICATION, *check appropriate box and supply the requisite information:*

[X] Continuation [ ] Divisional [ ] Continuation-in-part (CIP) of prior application No.: 09/319,544

18. CORRESPONDENCE ADDRESS

[ ] Customer Number or Bar Code Label or [X] Correspondence address below

(Insert Customer No. or Attach bar code label here)

Name	George R. Repper, Reg. No. 31,414				
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Submitted By	Jason M. Shapiro, Registration No. 35,354				

FEE TRANSMITTAL

(Large Entity)

Complete if Known	
Application Number	Unassigned
Filing Date	Herewith
First Named Inventor	V. McNALLY et al.
Group Art Unit	Unassigned
Examiner Name	Unassigned
Attorney Docket Number	2426-108

Total Amount of Payment	($)	710.00

jc930 U.S. PTO 09/694976 10/24/00

METHOD OF PAYMENT (check one)

1. ☒ The Commissioner is hereby authorized to charge indicated fees and credit any overpayment to Deposit Account Number 02-2135 in the name of Rothwell, Figg, Ernst & Manbeck

   ☒ Charge any Additional Fee Required Under 37 CFR 1.16 and 1.17

   ☐ Charge for the Issue Fee Set in 37 CFR 1.18 at the Mailing of the Notice of Allowance

2. ☐ Payment Enclosed: check

FEE CALCULATION

1. FILING FEE

	Fee Description	Fee Code	Fee Paid
☒	Utility Filing Fee	101	710.00
☐	Design Filing Fee	106	320.00
☐	Plant Filing Fee	107	490.00
☐	Reissue Filing Fee	108	760.00
☐	Provisional Filing Fee	114	150.00
		SUBTOTAL	**$ 710.00**

2. CLAIMS

		Number of Extra	at Rate of	Fee Paid
Total Claims	8 - 20 =	0	x $18.00 =	$ .00
Independent Claims	1 - 3 =	0	x $80.00 =	$ .00
Multiple Dependent Claims			+ $260.00	$ .00
			SUBTOTAL	**$ .00**

3. ADDITIONAL FEES

	Fee Description	Fee Code	Fee Paid
☐	Surcharge - late filing fee or oath	105	130.00
☐	Surcharge - late provisional filing fee or cover sheet	127	50.00

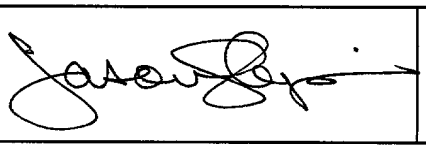
FEE CALCULATION (continued)

	Fee Description	Fee Code	Fee Paid
☐	Non-English specification	139	130.00
☐	For filing a request for reexamination	147	2,520.00
☐	Requesting publication of SIR prior to Examiner action	112	920.00
☐	Requesting publication of SIR after Examiner action	113	1,840.00*
☐	Extension for reply within first month	115	110.00
☐	Extension for reply within second month	116	390.00
☐	Extension for reply within third month	117	890.00
☐	Extension for reply within fourth month	118	1,390.00
☐	Extension for reply within fifth month	128	1,890.00
☐	Notice of Appeal	119	310.00
☐	Filing a brief in support of an appeal	120	310.00
☐	Request for Oral Hearing	121	260.00
☐	Petition to institute a public use proceeding	138	1,510.00
☐	Petition to revive -unavoidable	140	110.00
☐	Petition to revive - unintentional	141	1,210.00
☐	Utility issue fee (or reissue)	142	1,240.00
☐	Design issue fee	143	440.00
☐	Plant issue fee	144	600.00
☐	Petitions to the Commissioner	122	130.00
☐	Petitions related to provisional applications	123	50.00
☐	Submission of Information Disclosure Statement	126	240.00
☐	Recording each patent assignment per property (times number of properties)	581	40.00
☐	Filing a submission after final rejection (37 CFR .129(a))	146	690.00
☐	For each additional invention to be examined (37 CFR 1.129(b))	149	690.00

Other Fee (specify)

☐ _____

*Reduced by Basic Filing Fee Paid **SUBTOTAL** **$0.00**

SUBMITTED BY:					Complete (if applicable)
NAME AND REG. NUMBER	Jason M. Shapiro, Registration No. 35,354				
SIGNATURE		DATE	10/24/00	DEPOSIT ACCOUNT USER ID	02-2135

2426-108.FEE

2426-108
GRR:JMS

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	)	
	)	
V. McNALLY et al.	)	
	)	
Serial No.: **Unassigned**	)	Examiner: **Unassigned**
	)	
Filed: **Herewith**	)	Group Art Unit: **Unassigned**
	)	
For: **SYSTEM FOR PROPHYLACTIC TREATMENT OF MAMMARY DISORDERS** (As Amended)	)	

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, DC 20231

Dear Sir:

Prior to examination of the above-identified application, please make the following amendments:

IN THE TITLE:

Please change the title of the invention to: --SYSTEM FOR PROPHYLACTIC TREATMENT OF MAMMARY DISORDERS--.

IN THE SPECIFICATION:

Page 1, after line 1, insert --This application is a continuation of application Serial No. 09/319,544, filed on August 10, 1999.--

IN THE CLAIMS:

Please cancel claims 1 and 9-27, and amend the remaining claims as follows:

Claim 2, delete "1" insert --28--.

Claim 6, delete "any of claims 2 to 5" and insert --claim 2--.

Claim 7, delete "any of claims 1 to 6" and insert --claim 28--.

Claim 8, delete "any of claims 1 to 7" and insert --claim 28--.

Kindly add the following new claim:

--28. A system for forming an anti infective-free physical barrier in the teat canal of a non-human animal for prophylactic treatment of mammary disorders during the animal's dry period, said system consisting essentially of an anti infective-free seal formulation and an injector tube for infusing the seal formulation into the teat of the animal.--

REMARKS

The above amendments are being made to cross-reference a related application, to delete multiple dependencies in the claims, and to further define the invention. These amendments do not add to or depart from the original disclosure, or constitute prohibited new matter.

The claims, as amended, relate to a system for forming an anti infective-free physical barrier in the teat canal of a non-human animal for prophylactic treatment of mammary disorders during the animal's dry period. The system consists essentially of an anti infective-free seal formulation and an injector tube for infusing the seal formulation into the teat of the animal. The claimed system is distinguishable over the prior art applied in parent application Serial No. 09/319,544, which

shows either a film-forming composition which is not injected or a system having a seal in combination with an anti-infective agent.

In view of the above, Applicants respectfully request favorable action on the merits.

Respectfully submitted,

Jason M. Shapiro
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Dated: October 24, 2000
2426-108.PRE

ANTIINFECTIVE FREE INTRAMAMMARY VETERINARY COMPOSITION

Introduction

The invention relates to a veterinary composition, particularly for the prophylactic treatment of mastitis in cows.

Bacterial infection via the teats of a cow is the most common cause of mastitis.

It is known to treat teats of a cow with a long acting antibiotic in a slow release form with effective cover only being provided whilst minimum inhibitory concentration (MIC) levels of the antibiotic are maintained. This period of cover can vary from 4 to 10 weeks.

It is also known to infuse a cloxacillin-based antibiotic into the udder following the last lactation and before the cow is dried off, immediately followed by a seal formulation to seal the teat canal.

The invention is directed towards providing an improved veterinary composition, particularly for the prophylactic treatment of mastitis in dry cows.

Statements of Invention

We have found that if a physical barrier is provided within the teat canal and/or the lower teat sinus during the dry period without the use of antibiotics, the incidence of mammary disorders is substantially reduced. This is very surprising as all conventional treatments involve the use of antibiotics. Because no antibiotics are required very substantial advantages result, without any significant reduction in effectiveness.

According to the invention there is provided an antiinfective – free formulation for prophylaxis of intramammary infection comprising a seal formulation to provide a physical barrier in the teat canal.

This non-antibiotic approach to preventing new dry period infection in dairy cows has major potential for the dairy industry as it results in the reduction of the incidence of antibiotic contamination in early season milk production. Thus the invention provides a quality improvement to dairy production and will facilitate farmers meeting consumer preferences for reducing the level of antibiotics used in food production.

According to another aspect the invention provides an antiinfective-free method of prophylactic treatment of mammary disorders in non-human animals during an animals' dry period by sealing the teat canal with a seal formulation to provide a physical barrier in the teat canal.

The invention also provides a prophylactic method of controlling the infection of the mammary gland by a mastitis-causing organism by sealing the gland with a seal formulation to provide a physical barrier in the teat canal.

In a particularly preferred embodiment of the invention the seal formulation comprises a non-toxic heavy metal salt in a gel base. Preferably, the heavy metal salt is present in an amount of between 50% and 75% by weight, most preferably approximately 65% by weight. We have found that these are the optimum levels of heavy metal salt to achieve an effective seal.

In a preferred embodiment of the invention the heavy metal salt is bismuth sub-nitrate. This is a particularly useful non-toxic heavy metal salt.

In one embodiment of the invention the base is a gel based on aluminium stearate. Preferably, in this case, the gel includes a vehicle such as liquid paraffin. This formulation has effective processing and use properties.

In another embodiment of the invention the gel comprises a polyethylene gel. The gel may be based on low density polyethylene or on high density polyethylene.

The invention also provides a veterinary composition for use in the prophylactic treatment of mammary disorders in non-human animals during an animals' dry period.

According to a further aspect the invention provides a process for preparing a seal formulation comprising the steps of adding a non-toxic heavy metal salt to a gel base in at least two separate stages. This process is particularly effective for producing the preferred seal formulation of the invention.

Preferably, a first portion of heavy metal salt is added to a gel base in a first stage and a second portion of the heavy metal salt is added to the gel base containing the first portion of the heavy metal salt.

In this case preferably the weight ratio of the second portion of the heavy metal salt to the first portion of the heavy metal salt is at least 1:1, most preferably approximately 2:1.

Detailed Description of the Invention

The invention will be more clearly understood from the following description thereof given by way of example only.

EXAMPLE 1

Raw Materials: Liquid Paraffin B.P. 434.8 Kg
Alugel 30 DF (Sterile) 69.2 Kg
Bismuth Sub-Nitrate 936.0 Kg
B.P.C. (Sterile)

To prepare a batch of seal formulation the liquid paraffin is first delivered into a Skerman 800L kettle. The mixer is run at 20 RPM. The Alugel 30 DF (aluminium stearate) is then added through the transfer port. The mixer is turned off between additions of the Alugel powder. The steam line is opened and the temperature is allowed to rise to 160 to 165°C. This temperature is held for approximately 2 hours to sterilise the mixture. At the end of the sterilising cycle, the condensate valve is opened and blown down. Cooling water is then allowed into the jacket to cool the contents to less than 40°C. The base thus formed is then checked for quality. If necessary, the batch base may be homogenised for 10 minutes using a Silverson Homogeniser.

The charge port is then opened and 296 kg of the bismuth sub-nitrate is added in 10 kg lots. The contents are mixed for one minute at 20 RPM between additions of each 10 kg of bismuth sub-nitrate. Mixing is continued for approximately 1 hour at 45 RPM.

The remaining 640 Kg of bismuth sub-nitrate is then added in 10 Kg lots as above and mixing is continued for 1 hour following the final additions.

We have found that the addition of the bismuth sub-nitrate in two separate portions is important in producing a seal which can be processed and used effectively.

If necessary, the mixture is homogenised for 15 minutes using a Silverson Homogeniser.

The product is then transferred to a Colibri filling machine for filling into injector tubes.

EXAMPLE 2

5 Cows were infused in all four quarters at drying off with the seal formulation prepared as described in Example 1. These cows had previously been determined as uninfected in all four quarters.

Commencing at the first milking after calving, these cows were milked and the composite milk sample collected for analysis. This process was repeated for the first 10 milkings after calving. Milk samples were also collected in the same manner from 5 untreated cows.

To simulate the milk handling process within the milking system, these milk samples were passed through a fibre filter material used in milking machine filters. The milk samples were then analysed by mass spectrometry for bismuth concentration.

The average bismuth level in milk drawn at first milking was 3.3 ppm declining to 0.39 ppm at milking No. 10. The maximum level recorded for any individual cow was 8 ppm at first milking. For untreated cows the levels fluctuated in the range 0.001 to 0.03 ppm.

The seal formulation described in Example 1 was administered at drying off and has been shown to reduce the incidence of new infection in the dry cow period and in the period around calving. This reduction appears to be comparable with that achieved by prophylactic antibiotic treatment. Thus, the seal of the invention very surprisingly offers a non-antibiotic approach to dry cow period prophylaxis.

EXAMPLE 3

Evaluation of seal of Example 1.

- 4 Mastitis-free cows selected at drying off.
- 2 Teats in each cow infused at drying-off with seal and remaining teats untreated (day 0).
- 8 Teats sealed and 8 teats untreated (controls).
- 3 Days later (day 3) all teats were inoculated into the teat canal (depth of 4 mm; using 22 cfu of *Streptococcus dysgalactiae* code M and an inoculum volume of 0.1 ml).
- New infections resulting from use of the inoculum occurred in five (5) of the untreated quarters in the period day 3 to day 13.
- New infections resulting from use of the inoculum occurred in two (2) of the treated quarters in the period day 3 to day 13.
- Resulting new infections were monitored daily for 10 consecutive days after inoculation (to day 13).
- Samples of secretion were collected in an aseptic manner from quarters showing signs of clinical mastitis prior to treatment with antibiotics.
- All quarters in all 4 cows were sampled in an aseptic manner on day 13 (the last day of the trial) – these samples were used to:
  (1) check the amount of seal remaining in teats
  (2) monitor the level of *Str. dysgalactiae* surviving in the teats after 10 days

- Clinical Infection Results:

CFU/ml	Inoculation Depth	Control	Seal
22	4 mm	5^a / 8^b 63%	2^a / 8^b 25%

[a]Number of new infections

[b]Number of quarters challenged with *Str. dysgalactiae*

EXAMPLE 4

Evaluation of seal of Example 1.

- 17 Mastitis-free cows* selected at drying off.
- 2 Teats in each cow infused at drying-off with seal and remaining teats untreated (day 0).
- 32 Teats sealed and 32 teats untreated (controls).
- 3 Days later (day 3) all teats were inoculated into the teat canal (depth of 17 mm; using 1,190 cfu of *Streptococcus dysgalactiae* code M and an inoculum volume of 0.1 ml).
- New infections resulting from use of the inoculum occurred in twenty (20) of the untreated quarters in the period day 3 to day 13.
- New infections resulting from use of the inoculum occurred in eight (8) of the treated quarters in the period day 3 to day 13.
- Resulting new infections were monitored daily for 10 consecutive days after inoculation (to day 13).
- Samples of secretion were collected in an aseptic manner from quarters showing signs of clinical mastitis prior to treatment with antibiotics.
- All quarters in all 17 cows were sampled in an aseptic manner on day 13 (the last day of the trial) – these samples were used to:

(1) check the amount of seal remaining in teats

(2) monitor the level of *Str. dysgalactiae* surviving in the teats after 10 days.

- Clinical Infection Results:

CFU/ml	Inoculation Depth	Control	Seal
1,190	17 mm	20[a] / 32[b] 63%	8[a] / 32[b] 25%

[a]Number of new infections

[b]Number of quarters challenged with *Str. dysgalactiae*

* A total of 4 quarters were infected in three cows and these quarters were excluded from the study. Therefore 32 quarters were assigned to each treatment.

EXAMPLE 5

A total of 528 cows in three commercial herds were used. Each herd had a general history of dry period mastitis. The breed of the herds was predominantly Fresian or Fresian crosses.

Cows with at least three uninfected quarters, immediately prior to drying off, were identified within the three herds. All individual quarters were assumed to be independent units. The treatments used were as follows.

1. Negative Control-Untreated, no infusions at drying off, but teat ends were sanitised with alcohol soaked cotton wool swabs.

2. Positive Control-treated with 250 mg cephalonium in a long-acting base, infused at drying off. This product is known as CEPRAVIN DRYCOW. Cepravin is a trademark of Mallinckrodt Veterinary.

3. Antibiotic with Seal-Cloxacillin benzathine 600 mg in a 4 g unit dose infused at drying off and followed immediately by an infusion of 4 g of a blend of bismuth sub-nitrate (66%) in liquid paraffin with 8.5% Alugel 30DF.

4. Seal – Bismuth sub-nitrate 66% w/w in liquid paraffin with 8.5% alugel 30 DF in a unit dose of 4g infused at drying off.

These treatments were randomised among the 528 cows determined to have three or four uninfected quarters at drying off. The treatments were randomised between quarters to achieve as far as possible the same number of quarters per treatment, left and right, front and back.

Bacteriological results for individual quarters at drying off and at calving were compared to calculate the incidence of new intramammary infections (IMI). Chi-square testing was used to compare the incidence of new infection between quarters, treatments and controls.

The results of the treatments are summarised in Table 1.

This experiment has demonstrated that the antiinfective-free seal formulation of the invention administered at drying off is very surprisingly equivalent in terms of prophylactic efficacy, to a long acting dry cow antibiotic. All three treatments reduced new IMI during the dry period by approximately 85%. Surprisingly, there was no significant difference between the antibiotic based treatments and the antibiotic-free treatment of the invention. Thus, this study has shown that by physically sealing the teat canal with a seal which has no bacteriostatic or bacterial action, the dry period IMI may, surprisingly, be controlled. The invention has the

potential therefore of achieving dry period prophylaxis on a wide scale, at a lower unit cost, and with no risk of antibiotic residues after calving.

The invention is not limited to the embodiments hereinbefore described which may be varied in detail.

	Number of new IMI (quarters)											
	1. Negative controls			2. Positive controls			3. Antibiotic + Seal			4. Seal		
Herd ID	1	2	3	1	2	3	1	2	3	1	2	3
Total no quarters	249	141	138	249	141	138	249	141	139	249	141	138
DRY PERIOD												
Clinical IMI	10	6	2	0	1	1	1	1	0	1	0	0
CALVING IMI												
Strep. spp.	25	21	4	0	4	1	2	1	1	2	2	0
S. aureus	1	2	0	0	0	0	0	0	0	0	1	0
Coag. Neg. staph.	2	0	4	0	0	1	1	0	1	4	0	2
Coliforms	1	2	1	1	2	1	1	0	0	0	1	0
Other organisms	0	2	0	1	1	0	0	1	0	0	0	0
Clinical, no growth	1	1	0	0	0	0	0	0	0	0	0	0
Total calving IMI	30	28	9	2	7	3	4	2	2	6	4	2
Total IMI	40	34	11	2	8	4	5	3	2	7	4	2
Overall IMI rate (%)	16.1	24.1	8.0	0.8	5.7	2.9	2.0	2.1	1.4	2.8	2.8	1.4
Total IMI across herds & periods												
Strep. Spp. IMI		68^a			7^b			6^b			5^b	
Other paths IMI		17^c			7^d			4^d			6^d	
All paths IMI		85^f			14^g			10^g			13^g	
Total quarters		528			528			528			528	
Overall new IMI Rate		16.1%			2.7%			2.5%			1.9%	

Table I New intrammary infections (IMI) identified during the study, grouped by period and by herd. (Within a row, values with differing superscripts are significantly different)

CLAIMS

1. An antiinfective-free formulation for prophylaxis of intramaminary infection comprising a seal formulation to provide an anti infective-free physical barrier in the teat canal.

2. A formulation as claimed in claim 1 wherein the seal formulation comprises a non-toxic heavy metal salt in a gel base.

3. A formulation as claimed in claim 2 wherein the seal formulation contains at least 40% by weight of the heavy metal salt.

4. A formulation as claimed in claim 3 wherein the seal formulation contains from 50% to 75% by weight of the heavy metal salt.

5. A formulation as claimed in claim 4 wherein the seal formulation contains approximately 65% by weight of the heavy metal salt.

6. A formulation as claimed in any of claims 2 to 5 wherein the salt is bismuth sub-nitrate.

7. A formulation as claimed in any of claims 1 to 6 wherein the base is a gel based on aluminium stearate.

8. A formulation as claimed in any of claims 1 to 7 wherein the base includes liquid paraffin as a vehicle.

9. An antiinfective-free formulation substantially as hereinbefore described with reference to the Examples.

10. An antiinfective-free method of prophylactic treatment of mammary disorders in non-human animals during an animals' dry period by sealing the teat canal with a seal formulation to provide a physical barrier in the teat canal.

11. A prophylactic method of controlling infection of the mammary gland by a mastitis-causing organism comprising sealing the gland with a seal formulation to provide a physical barrier in the teat canal.

12. A method as claimed in claim 10 or 11 wherein the seal formulation comprises a non-toxic heavy metal salt in a gel base.

13. A method as claimed in any of claims 10 to 12 wherein the seal formulation contains at least 40% by weight of the heavy metal salt.

14. A method as claimed in claim 13 wherein the seal formulation contains from 50% to 75% by weight of the heavy metal salt.

15. A method as claimed in claim 14 wherein the seal formulation contains approximately 65% by weight of the heavy metal salt.

16. A method as claimed in any of claims 10 to 15 wherein the salt is bismuth sub-nitrate.

17. A method as claimed in any of claims 10 to 16 wherein the base is a gel based on aluminium stearate.

18. A method as claimed in any of claims 10 to 17 wherein base includes liquid paraffin as a vehicle.

19. An antiinfective-free method of prophylactic treatment of mammary disorders substantially as hereinbefore described with reference to the Examples.

20. A process for preparing a seal formulation comprising the steps of adding a non-toxic heavy metal salt to a gel base in at least two separate stages.

21. A process as claimed in claim 19 wherein a first portion of heavy metal salt is added to the gel base in a first stage and a second portion of the heavy metal salt is added to the gel base containing the first portion of the heavy metal salt.

22. A process as claimed in claim 21 wherein the weight ratio of the second portion of the heavy metal salt to the first portion of the heavy metal salt is at least 1:1.

23. A process as claimed in claim 22 wherein the weight ratio is approximately 2:1.

24. A process as claimed in any of claims 20 to 23 wherein the seal formulation contains at least 40% by weight of the heavy metal salt.

25. A process as claimed in claim 24 wherein the seal formulation contains from 50% to 75% by weight of the heavy metal salt.

26. A process as claimed in any of claims 20 to 25 wherein the seal formulation contains approximately 65% by weight of the heavy metal salt.

27. A process as claimed in any of claims 20 to 26 wherein the salt is bismuth sub-nitrate.

28. A process as claimed in any of claims 20 to 27 wherein the base is a gel based on aluminium stearate.

29. A process as claimed in any of claims 20 to 28 wherein the gel contains liquid paraffin as a vehicle.

30. A process substantially as hereinbefore described with reference to the Examples.

31. A seal formulation whenever prepared by a process as claimed in any of claims 20 to 30.

Docket No. **2426-108**

Declaration and Power of Attorney for Patent Application

As a below named declarant, I hereby declare that:

Upon information and belief, Vincent MCNALLY having a residence, post office address and citizenship as stated below, and James Patrick MORGAN, a now deceased citizen of Ireland who had a residence and post office address at Bellinter, Navan, County Meath, Ireland, are the original, first and joint inventors of the subject matter which is claimed and for which a patent is sought, on the invention entitled ANTIINFECTIVE FREE INTRAMAMMARY VETERINARY COMPOSITION, the specification of which ~~corresponds to PCT/IB97/00065 filed December 17, 1997 and amended on December 9, 1998~~, was filed July 13, 1999 as USSN 09/319,544, Attorney Docket No. 2426-108.

The undersigned ~~x~~ Mrs Breda Morgan having a residence, post office address and citizenship as stated below, is the legal representative of the deceased inventor James Patrick MORGAN, and is empowered to act on behalf of said deceased inventor.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability in accordance with Title 37, Code of Federal Regulations, § 1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, § 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)

			Priority Claimed	
960896	Ireland	18 December 1996	[x]	[ ]
(Number)	(Country)	(Day/Month/Year)	Yes	No

I hereby claim the benefit under Title 35, United States Code § 119(e) of any United States provisional application(s) listed below.

(Application Serial No.) (Filing Date)

I hereby claim the benefit under Title 35, United States Code, § 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not

disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, 1.56(a) which occurred between

the filing date of the prior application and the national or PCT international filing date of this application:

(Application Serial No.)	(Filing Date)	(Status)
(Application Serial No.)	(Filing Date)	(Status)

I or we hereby appoint the following attorneys to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith, and request that all correspondence about the application be addressed to ROTHWELL, FIGG, ERNST & KURZ, p.c., Suite 701-E, 555 13th Street, N.W., Washington, D.C 20004

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

x Vincent Mc Nally | x [signature] | x 09 July 1999
FIRST NAMED INVENTOR | SIGNATURE | DATE

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2426-103
GRR:JMS

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of	)	
	)	
Vincent McNALLY et al.	)	
	)	
Serial No. **09/319,544**	)	Examiner: **J. Reamer**
	)	
Filed: **August 10, 1999**	)	Group Art Unit: **1614**
	)	
For: **ANTI-INFECTIVE FREE INTRAMAMMARY VETERINARY COMPOSITION**	)	

ASSOCIATE POWER OF ATTORNEY

Assistant Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

The undersigned hereby appoints the following individual as associate attorney to prosecute this application and transact all business before the U.S. Patent and Trademark Office connected therewith.

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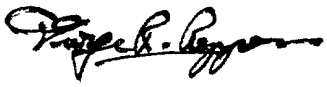
All other previously granted powers of attorney remain in effect.

Respectfully submitted,



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